

Site One:

Gooseberry Creek Crossing No. 1

Location: Approximately 6.1 miles south of Interstate 70 (STA 36+143). Section 6, T23S, R2E

Nature of Activity: The work at this location includes improving the existing substandard roadway to current regulatory standards. There are no major geometric horizontal realignments at this location. The existing 6.1 meter (20 feet) roadway will be widened to 7.8 meters (26 feet). The existing profile grade will be raised by approximately 3.8 meters (12.5 feet). To minimize environmental impacts, fill slopes have been steepened to 1:2 (2:1) slopes. Safety improvements are provided to shield drivers from these steep slopes and drainage structure, which are considered roadside hazards.

Activities to the Gooseberry Creek involve the replacement of the existing drainage structures, which include a concrete box culvert and corrugated metal pipe (CMP). A 3350 mm x 2440 mm (11x8 ft) reinforced concrete box (RCB) is proposed to replace existing RCB culverts and (CMP) culvert. The new structure is 34 meters (111.5 feet) in length and includes wingwalls. The proposed structure is designed to accommodate a 100 year storm event.

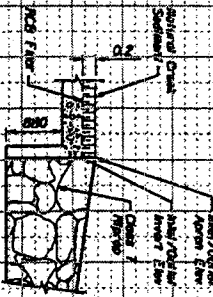
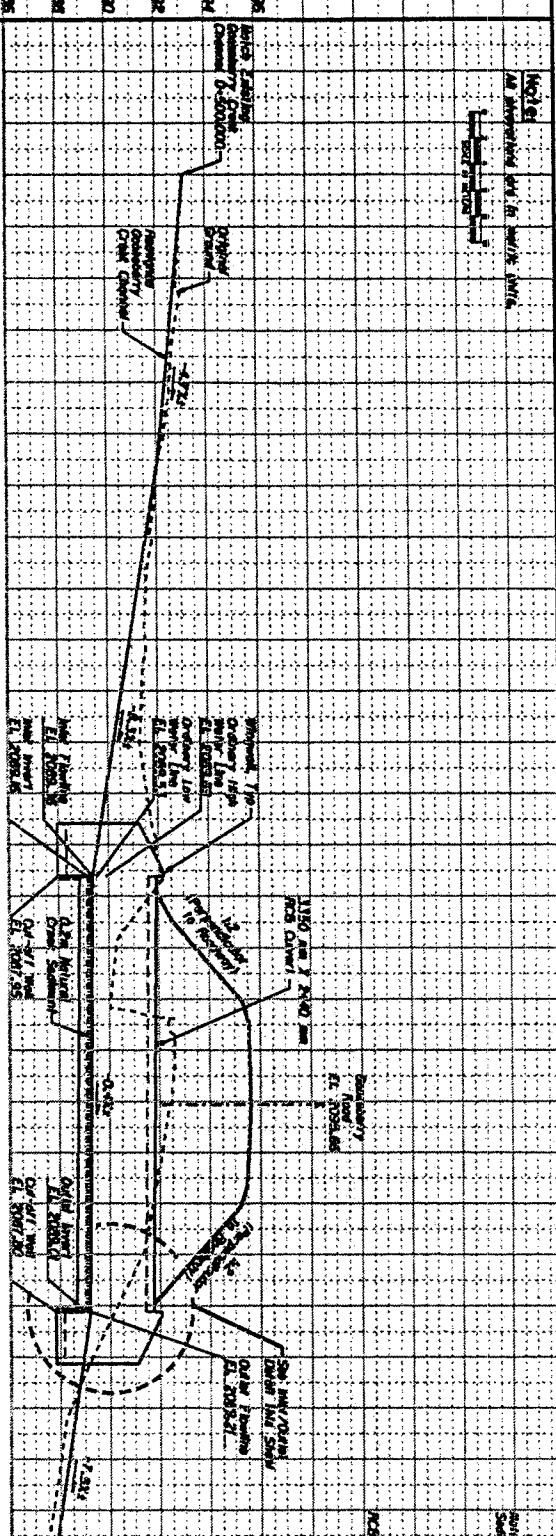
Culvert Information	Existing		Proposed
Shape	Box	Cylindrical	Box
Material	RCB	CMP	RCB
Size	1520mm x 2130mm	1830mm	3350mm x 2440mm
Upstream Invert Elevation (m)	2090.04	2089.63	2089.16
Downstream Invert Elevation (m)	2089.82	2089.45	2089.01
Culvert Length (m)	12.5	10.7	34.0
Slope (%)	1.8	1.7	.44

The hydrologic characteristics of Gooseberry Creek through this reach are listed in the following table:

Hydrologic Characteristic	Gooseberry I Crossing Value (metric units)	Gooseberry I Crossing Value (English units)
Drainage Area	3140 ha	7750 ac (12.1 mi ²)
Stream Length through Drainage Area	10,950 m	35,925 ft (6.8 mi)
Approximate Stream Slope through Drainage Area	10%	10%
2-Year Discharge (Q ₂)	1.5 cms	52 cfs
25-Year Discharge (Q ₂₅)	7.9 cms	280 cfs
100-Year Discharge (Q ₁₀₀)	8.9 cms	315 cfs

This segment of the Gooseberry Creek contain adult and juvenile Rainbow Trout, whos typical spawning season is from December to April. The drainage structure is designed to maintain safe fish

0 (25) = 7.9 m³/s
Drohnge Arns = 5.137 kg

[illegible]

UT PFH-39 RECONSTRUCTION
SEVENMILE-GOOSEBERRY ROAD
GOOSEBERRY CREEK

APPLICANT:
CENTRAL FEDERAL LANDS HIGHWAY DIVISION OF RMAS
DATE PREPARED:
SEPTEMBER 5, 2001

SHEET	104/115
NO.	SHEET

18-5 18-26

18-5	18-26
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Site Two:

Gates Creek Crossing

Location: Approximately 5.2 miles south of Interstate 70 (STA 37+670). Section 36, T22S, R1E

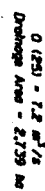
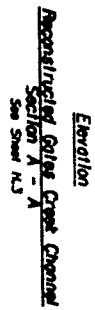
Nature of Activity: The work at this location includes improving the existing substandard roadway to current regulatory standards. There are no major geometric horizontal realignments at this location. The existing 6.1 meter (20 feet) roadway will be widened to 7.8 meters (26 feet). The existing profile grade will be raised by approximately 2.5 meters (8.2 feet). To minimize environmental impacts, fill slopes have been steepened to 1:2 (2:1) slopes. Safety improvements are provided to shield drivers from these steep slopes and drainage structure, which are considered roadside hazards.

Activities to the Gates Creek involve the replacement of the existing drainage structures, which include two corrugated metal pipes (CMP). The 1520 mm existing culvert receives the normal flow of the creek and the 1220 mm culvert acts as an overflow culvert for storm events. A 3350 mm x 2440 mm (11X8 ft) reinforced concrete box (RCB) is proposed to replace the two existing cylindrical culverts. The new structure is 65.5 meters (215 feet) in length and includes wingwalls. The proposed structure is designed to accommodate a 100 year storm event.

Culvert Information	Existing	Existing	Proposed
Shape	Cylindrical	Cylindrical	Box
Material	CMP	CMP	RCB
Size	1520mm	1220mm	3350mm x 2440mm
Upstream Invert Elevation (m)	2016.70	2018.66	2016.90
Downstream Invert Elevation (m)	2014.50	2016.96	2016.75
Culvert Length (m)	16.0	9.4	65.5
Slope (%)	1.8	1.4	0.25

The hydrologic characteristics of Gates Creek through this reach are listed in the following table:

Hydrologic Characteristic	Gates Creek Crossing Value (Metric Units)	Gates Creek Crossing Value (English Units)
Drainage Area	2,500 ha	6,169 ac (9.6 mi ²)
Stream Length through Drainage Area	10,690 m	35,065 ft (6.6 mi)
Approximate Stream Slope through Drainage Area	10%	10%
2-Year Discharge (Q ₂)	1.0 cms	37 cfs
25-Year Discharge (Q ₂₅)	7.9 cms	170 cfs
100-Year Discharge (Q ₁₀₀)	8.1 cms	287 cfs



18-10	18-26
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- NOTES:**
1. The Contractor shall maintain a minimum 10' separation. Construction shall be limited to the construction of the erosion control measures approved by the CO. No other construction shall be made for construction of access road to Gooseberry Creek.
 2. Erosion control matting shall be placed on slopes identified by exception for slope protection to be constructed with Section 34-600. See the Erosion Control Summary sheet for details.
 3. Construction of slope protection to be completed during the first period. See Special Control Requirements for additional flow restrictions.
 4. Prior to beginning slope protection construction, the existing creek, riparian habitat, and riparian vegetation shall be inventoried and mapped. The Special Control Requirements shall be updated to reflect the inventory and mapping. All work shall conform to Section 34-600 and the Special Control Requirements.

Slope Protection Control Table

Location	Easting
2055029.038	48765.683
2055029.062	48765.705
2055029.086	48765.727
2055029.110	48765.749
2055029.134	48765.771
2055029.158	48765.793
2055029.182	48765.815
2055029.206	48765.837
2055029.230	48765.859
2055029.254	48765.881
2055029.278	48765.903
2055029.302	48765.925
2055029.326	48765.947
2055029.350	48765.969
2055029.374	48765.991
2055029.398	48766.013
2055029.422	48766.035
2055029.446	48766.057
2055029.470	48766.079
2055029.494	48766.101
2055029.518	48766.123
2055029.542	48766.145
2055029.566	48766.167
2055029.590	48766.189
2055029.614	48766.211
2055029.638	48766.233
2055029.662	48766.255
2055029.686	48766.277
2055029.710	48766.299
2055029.734	48766.321
2055029.758	48766.343
2055029.782	48766.365
2055029.806	48766.387
2055029.830	48766.409
2055029.854	48766.431
2055029.878	48766.453
2055029.902	48766.475
2055029.926	48766.497
2055029.950	48766.519
2055029.974	48766.541
2055029.998	48766.563
2055030.022	48766.585
2055030.046	48766.607
2055030.070	48766.629
2055030.094	48766.651
2055030.118	48766.673
2055030.142	48766.695
2055030.166	48766.717
2055030.190	48766.739
2055030.214	48766.761
2055030.238	48766.783
2055030.262	48766.805
2055030.286	48766.827
2055030.310	48766.849
2055030.334	48766.871
2055030.358	48766.893
2055030.382	48766.915
2055030.406	48766.937
2055030.430	48766.959
2055030.454	48766.981
2055030.478	48767.003
2055030.502	48767.025
2055030.526	48767.047
2055030.550	48767.069
2055030.574	48767.091
2055030.598	48767.113
2055030.622	48767.135
2055030.646	48767.157
2055030.670	48767.179
2055030.694	48767.201
2055030.718	48767.223
2055030.742	48767.245
2055030.766	48767.267
2055030.790	48767.289
2055030.814	48767.311
2055030.838	48767.333
2055030.862	48767.355
2055030.886	48767.377
2055030.910	48767.399
2055030.934	48767.421
2055030.958	48767.443
2055030.982	48767.465
2055031.006	48767.487
2055031.030	48767.509
2055031.054	48767.531
2055031.078	48767.553
2055031.102	48767.575
2055031.126	48767.597
2055031.150	48767.619
2055031.174	48767.641
2055031.198	48767.663
2055031.222	48767.685
2055031.246	48767.707
2055031.270	48767.729
2055031.294	48767.751
2055031.318	48767.773
2055031.342	48767.795
2055031.366	48767.817
2055031.390	48767.839
2055031.414	48767.861
2055031.438	48767.883
2055031.462	48767.905
2055031.486	48767.927
2055031.510	48767.949
2055031.534	48767.971
2055031.558	48767.993
2055031.582	48768.015
2055031.606	48768.037
2055031.630	48768.059
2055031.654	48768.081
2055031.678	48768.103
2055031.702	48768.125
2055031.726	48768.147
2055031.750	48768.169
2055031.774	48768.191
2055031.798	48768.213
2055031.822	48768.235
2055031.846	48768.257
2055031.870	48768.279
2055031.894	48768.301
2055031.918	48768.323
2055031.942	48768.345
2055031.966	48768.367
2055031.990	48768.389
2055032.014	48768.411
2055032.038	48768.433
2055032.062	48768.455
2055032.086	48768.477
2055032.110	48768.499
2055032.134	48768.521
2055032.158	48768.543
2055032.182	48768.565
2055032.206	48768.587
2055032.230	48768.609
2055032.254	48768.631
2055032.278	48768.653
2055032.302	48768.675
2055032.326	48768.697
2055032.350	48768.719
2055032.374	48768.741
2055032.398	48768.763
2055032.422	48768.785
2055032.446	48768.807
2055032.470	48768.829
2055032.494	48768.851
2055032.518	48768.873
2055032.542	48768.895
2055032.566	48768.917
2055032.590	48768.939
2055032.614	48768.961
2055032.638	48768.983
2055032.662	48769.005
2055032.686	48769.027
2055032.710	48769.049
2055032.734	48769.071
2055032.758	48769.093
2055032.782	48769.115
2055032.806	48769.137
2055032.830	48769.159
2055032.854	48769.181
2055032.878	48769.203
2055032.902	48769.225
2055032.926	48769.247
2055032.950	48769.269
2055032.974	48769.291
2055032.998	48769.313
2055033.022	48769.335
2055033.046	48769.357
2055033.070	48769.379
2055033.094	48769.401
2055033.118	48769.423
2055033.142	48769.445
2055033.166	48769.467
2055033.190	48769.489
2055033.214	48769.511
2055033.238	48769.533
2055033.262	48769.555
2055033.286	48769.577
2055033.310	48769.599
2055033.334	48769.621
2055033.358	48769.643
2055033.382	48769.665
2055033.406	48769.687
2055033.430	48769.709
2055033.454	48769.731
2055033.478	48769.753
2055033.502	48769.775
2055033.526	48769.797
2055033.550	48769.819
2055033.574	48769.841
2055033.598	48769.863
2055033.622	48769.885
2055033.646	48769.907
2055033.670	48769.929
2055033.694	48769.951
2055033.718	48769.973
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2055033.766	48770.017
2055033.790	48770.039
2055033.814	48770.061
2055033.838	48770.083
2055033.862	48770.105
2055033.886	48770.127
2055033.910	48770.149
2055033.934	48770.171
2055033.958	48770.193
2055033.982	48770.215
2055034.006	48770.237
2055034.030	48770.259
2055034.054	48770.281
2055034.078	48770.303
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2055034.126	48770.347
2055034.150	48770.369
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2055034.222	48770.435
2055034.246	48770.457
2055034.270	48770.479
2055034.294	48770.501
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2055034.342	48770.545
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2055034.390	48770.589
2055034.414	48770.611
2055034.438	48770.633
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2055035.086	48771.227
2055035.110	48771.249
2055035.134	48771.271
2055035.158	48771.293
2055035.182	48771.315
2055035.206	48771.337
2055035.230	48771.359
2055035.254	48771.381
2055035.278	48771.403
2055035.302	48771.425
2055035.326	48771.447
2055035.350	48771.469
2055035.374	48771.491
2055035.398	48771.513
2055035.422	48771.535
2055035.446	48771.557
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2055035.494	48771.601
2055035.518	48771.623
2055035.542	48771.645
2055035.566	48771.667
2055035.590	48771.689
2055035.614	48771.711
2055035.638	48771.733
2055035.662	48771.755
2055035.686	48771.777
2055035.710	48771.799
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2055036.958	48772.943
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2055037.006	48772.987
2055037.030	48773.009
2055037.054	48773.031
2055037.078	

Various ephemeral and intermittent streams - Tributaries to Gates, Gooseberry and Salina Creeks:

Location: See Block 16 for mile locations from the junction of Interstate 70 to the tributary site.

Nature of Activity: The work at these locations include improving the existing substandard roadway to current regulatory standards. There are no major geometric horizontal realignments at this location. The existing 6.1 meter (20 feet) roadway will be widened to 7.8 meters (26 feet). Roadway profile changes at these locations are minor.

Activities to these tributaries involve the replacement of the existing drainage structures, which include various sizes of corrugated metal pipe (CMP), as listed below. The proposed culverts are designed to accommodate a 25-year storm event. Concrete wingwalls will be constructed at culvert pipes greater than 1.2 meters (48-inches) in diameter. Erosion and scour protection consisting of a 3 to 7.5-meter (2 to 25-foot) riprap apron will be constructed at these culverts. All impacts to the existing drainage channels will be restored and re-vegetated.

Location	Nature of Activity
Station 26+909	Install 66-feet (20 m) of 48 inch (1200mm) diameter culvert pipe.
Station 30+037	Install 144-feet (44 m) of 60 inch (1500mm) diameter culvert pipe.
Station 30+797	Install 66-feet (20 m) of 48 inch (1200mm) diameter culvert pipe.
Station 31+936	Install 66-feet (20 m) of 60 inch (1500mm) diameter culvert pipe.
Station 35+064	Install 2- 62-feet (19 m) of 36 inch (900mm) diameter culvert pipe.
Station 42+260	Install 82-feet (25 m) of 60 inch (1500mm) diameter culvert pipe.
Station 43+000	Install 105-feet (32 m) of 48 inch (1200mm) diameter culvert pipe.

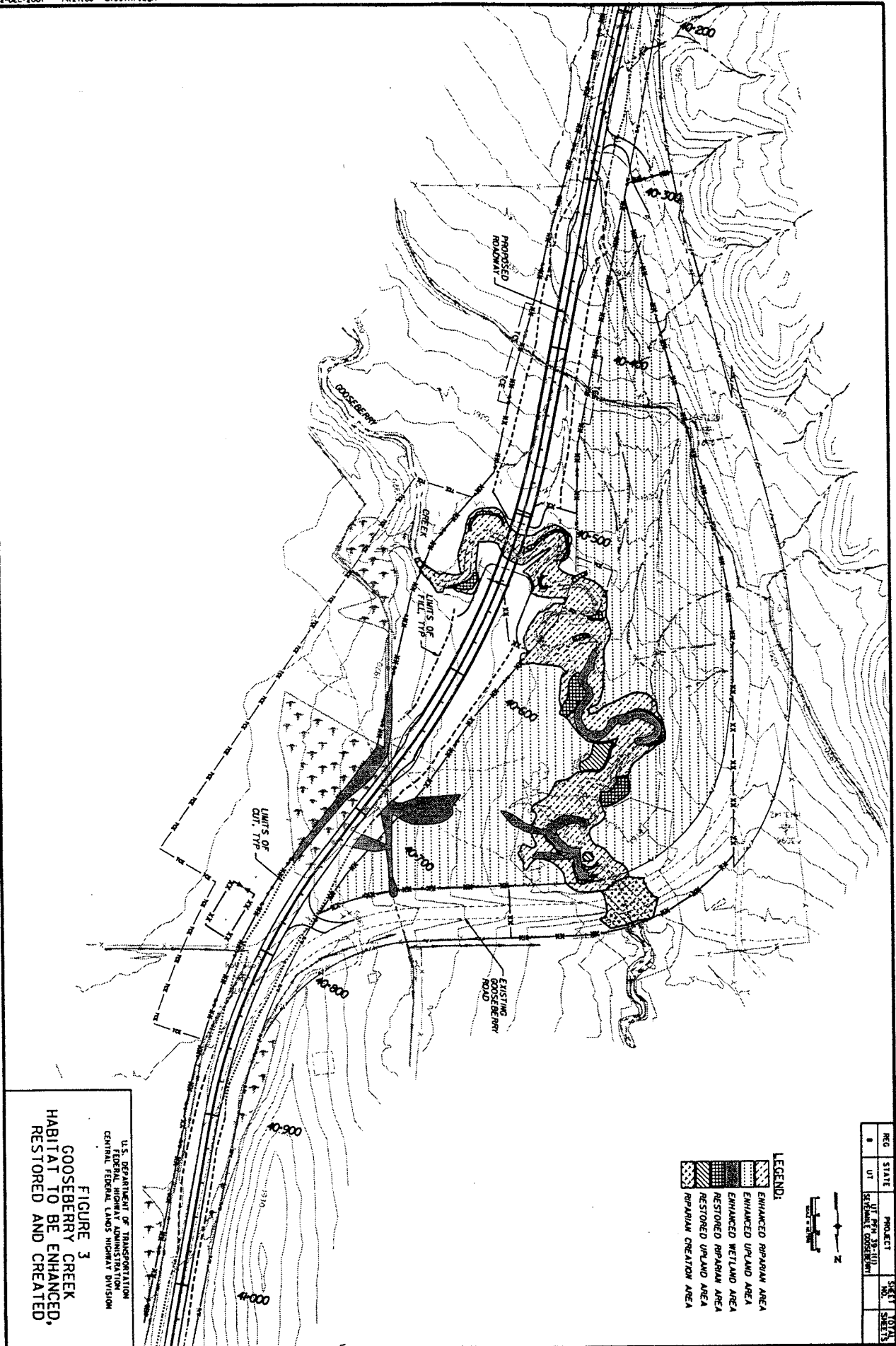
The hydrologic characteristics of these tributaries to Gooseberry Creek are listed in the following table. Flows are based on a 25-year storm events.

Location	Drainage Basin Area (English units)	Drainage Basin Area (Metric units)	Flow Estimate 25-yr Event (English units)	Flow Estimate 25-yr Event (Metric units)
Station 26+909	35.6 ac	14.41 ha	33.0 cfs	0.932 cms
Station 30+037	288.6 ac	116.84 ha	130.0 cfs	3.668 cms
Station 30+797	384.7 ac	155.75 ha	171.0 cfs	4.826 cms
Station 31+936	270.7 ac	109.6 ha	119.0 cfs	3.358 cms
Station 35+064	136.0 ac	56.7 ha	79.0 cfs	2.231 cms
Station 42+260	1585.3 ac	641.8 ha	159.0 cfs	4.492 cms
Station 43+000	26.6 ac	10.8 ha	24.0 cfs	0.667 cms

cms: cubic meters per second, cfs: cubic feet per second, ac: acres, ha: hectares

The following maps indicate the tributary locations and terrain conditions.





U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

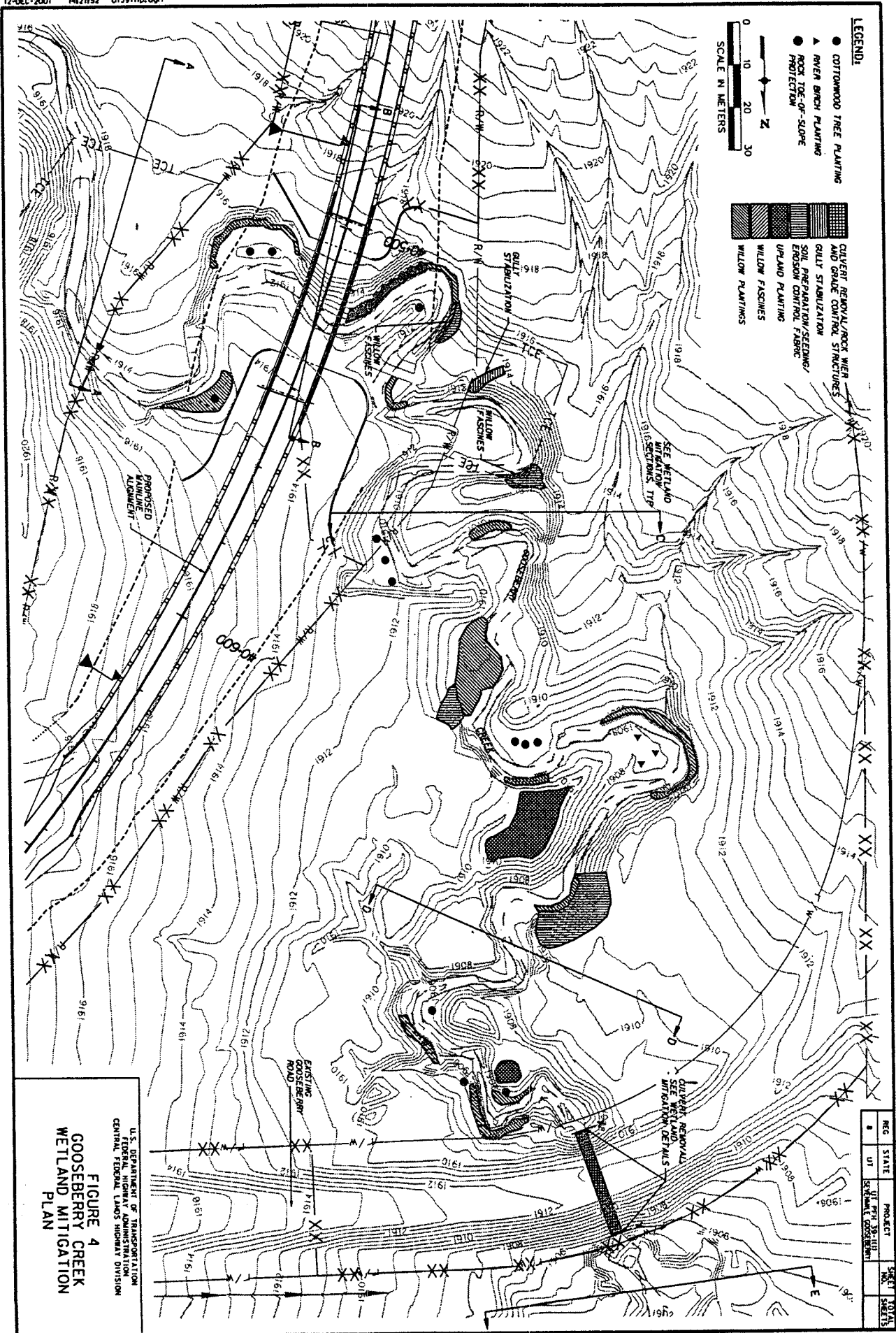
FIGURE 3
GOOSEBERRY CREEK
HABITAT TO BE ENHANCED,
RESTORED AND CREATED

LEGEND:

- Enhanced Riparian Area
- Enhanced Upland Area
- Enhanced Wetland Area
- Restored Riparian Area
- Restored Upland Area
- Riparian Creation Area



REG	STATE	PROJECT	SHEET
UT	UT	UT FHW 39-111	111
		SEPARATE COORDINATE	



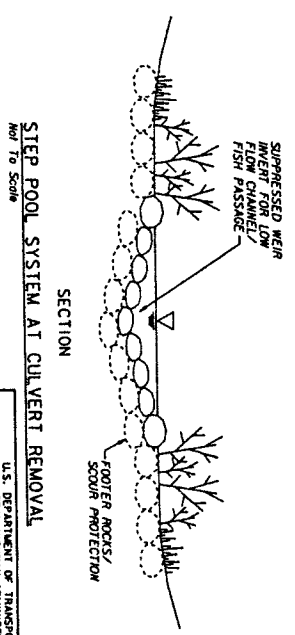
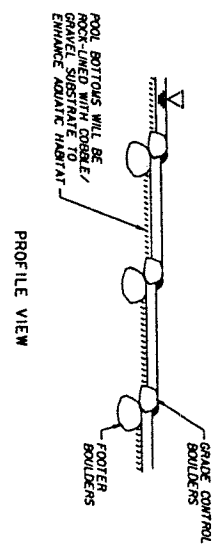
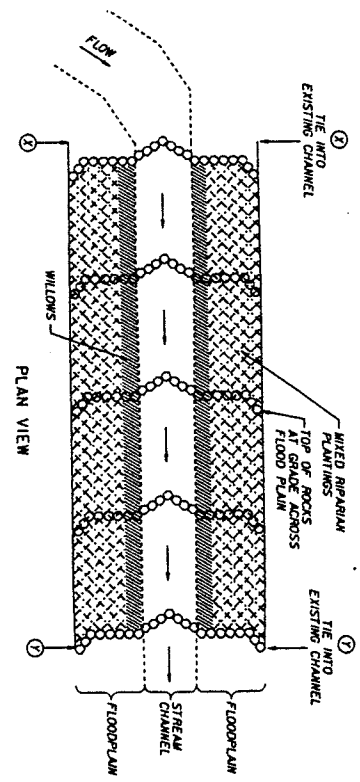
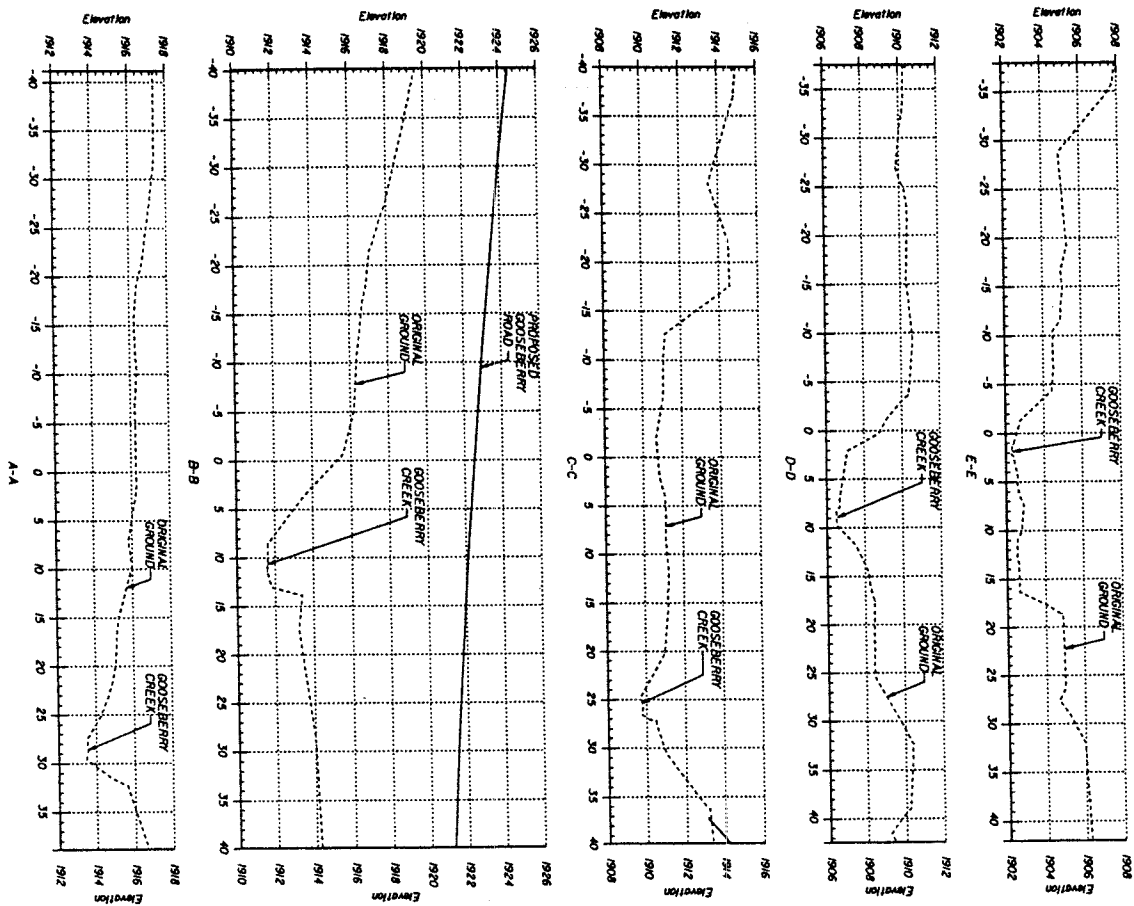


FIGURE 5
GOOSEBERRY CREEK
WETLAND MITIGATION
SECTIONS AND DETAILS

REG.	STATE	PROJECT	SHEET	TOTAL
UT	UT	UT PER 39-1111	1	1
		STANDARD COORDINATE		

Best Management Practices (BMPs) for Erosion and Sediment Control

BMPs for erosion and sediment control are used as both temporary measures during construction and permanent measures for long-term pollution prevention. The 1987 amendments to the Clean Water Act (CWA) required the Environmental Protection Agency (EPA) to establish the National Pollutant Discharge Elimination System (NPDES) for point discharges of storm water. This led to the development of permits which require site-specific storm water pollution prevention plans. These permits address installation and maintenance of storm water management prior to final stabilization of the construction site. Section 401 of the CWA requires that a State water quality certification be obtained for any project that results in a discharge into navigable waters, and Section 404 requires a permit from the Corps of Engineers for the discharge of any fill material into navigable waters.

Federal Lands Highway projects are constructed using guidelines included in the *Standard Specifications For Construction of Roads and Bridges on Federal Highway Projects (FP)*, which contain BMP's that are employed on the Central Federal Lands Highway Division's forest highway projects. Contract requirements for all FHWA projects are contained in the FP. For each individual project, the FP is normally supplemented with a set of Special Contract Requirements (SCRs) which either modify an FP requirement or add a new requirement. These are discussed after the FP requirements. Following are excerpts from the FP which relate to erosion, sediment, and water quality. Note that the FP speaks directly to the contractor.

Do not operate mechanized equipment or discharge or otherwise place any material within the wetted perimeter of any waters of the U.S. within the scope of the Clean Water Act (33 USC § 1251 et seq.). This includes wetlands, unless authorized by a permit issued by the U.S. Army Corps of Engineers according to 33 USC § 1344 and, if required, by any state agency having jurisdiction over the discharge of materials into waters of the U.S. In the event of an unauthorized discharge:

- (a) Immediately prevent further contamination
- (b) Immediately notify the proper authorities
- (c) Mitigate damages as required

Separate work areas, including material sources, by the use of a dike or other suitable barrier that prevents sediment, petroleum products, chemicals, or other liquid or solid material from entering the waters of the U.S. Use care in constructing and removing the barriers to avoid any discharge of material into, or the siltation of, the water. Remove and properly dispose of the sediment or other material collected by the barrier.

For soil erosion control, among other requirements, the FP directs the contractor to:

Limit the combined grubbing and grading operations area to 30,000 square meters of exposed soil at one time.

Unless a specific seeding season is identified in the contract, apply permanent turf establishment to the finished slopes and ditches within 30 days.

Apply temporary turf establishment or other approved measures on disturbed areas that will remain exposed for over 30 days.

Construct and maintain erosion controls on and around soil stockpiles to prevent soil loss.

Following each day's grading operations, shape earthwork to minimize and control erosion from storm runoff.

Inspect all erosion control facilities at least every 7 days, within 24 hours after more than 10 millimeters of rain in a 24-hour period, and as required by the contract permits.

Maintain temporary erosion control measures in working condition until the project is complete or the measures are no longer needed. Clean erosion control measures when half full of sediment.

The FP also includes specifications for topsoil, fertilizer, mulches, seed and other plant materials, erosion control mats, tackifiers, sod, straw bales, silt fence, geotextiles, etc.

To comply with NPDES permit requirements, an erosion control plan is required for each project. It may be developed by the FHWA or required of the contractor by the SCRs. This plan is used as the basis for protecting the project from erosion during construction. The contractor is required to incorporate all permanent erosion control features into the project at the earliest practicable time. No work can be started until the necessary controls are installed.

For projects with water quality issues, the SCRs state that the contractor is required to designate an individual, other than the project superintendent, whose primary responsibility is to serve as the water quality supervisor for the duration of the project. The water quality supervisor's responsibilities include directing the implementation of effective erosion/sediment control measures to control construction site drainage and water quality; directing the construction, operation, and dismantling of temporary erosion control features; and being available to modify site drainage and implement storm and winter shutdown procedures. Winter shutdown procedures are included in the erosion control plan.

For projects with water quality issues, the SCRs state that if a contractor's truck or other vehicle should accidentally dump pollutants that could pollute any water body along the project, emergency action shall be taken to prevent contamination of the water body. The SCR specifies that the carrier of the spilled material is responsible for cleanup of spilled material, and includes reporting procedures for accidental spillage. The appropriate agencies are immediately informed of any such event. No in-stream fueling of any vehicle is permitted. In-stream activity is limited to that necessary to place structures and for wetland replacement measures. The SCRs specify that, if the contractor should locate an oil storage facility that exceeds a certain capacity (as specified in Environmental Protection Agency (EPA) regulations) and where the occurrence of spills could contaminate water bodies along the proposal, the contractor would have to comply

with those EPA regulations in the preparation and implementation of a Spill Prevention Control and Countermeasure Plan.

The following statement is included in the SCRs whenever a project may affect a live stream:

The construction project engineer will be responsible for monitoring turbidity during the construction of this project to assure compliance with state water quality standards. The turbidity will be measured using an HF-DRT 15 turbidimeter or equivalent. Measurements will be taken upstream from the project area (as a control) and 150 m (500 feet) downstream in the area of highest turbidity whenever noticeable turbidity is being generated from the project. If these measurements show an increase of 10 Nephelometric Turbidity Units or more, the Engineer shall suspend construction operations in the vicinity of the problem area and modify the erosion control plan to eliminate the cause of high turbidity.

The SCRs contain seeding requirements for slopes, and this is normally supplemented with detail drawings and quantities in the project plans.